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| 09/750,673 | 01/02/2001 | Soeren Moritz | Q59736 | 8001 |

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| EXAMINER | |
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| FERRIS III, FRED O | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2128 | |

DATE MAILED: 01/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/750,673 | MORITZ ET AL. | |
| | Examiner | Art Unit | |
| | Fred Ferris | 2123 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *17 September 2004* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 April 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

## DETAILED ACTION

1. *Claims 1-26 have been presented for examination based on applicant's amendment filed on 17 September 2004. Claims 1-26 remain rejected.*

### *Response to Arguments*

2. *Applicants arguments filed on 17 September 2004 have been fully considered but are not persuasive.*

*Regarding applicant's response to 112(1) rejection: Applicants now attempt to argue that the examiner has not established a prima facie case of non-enablement. Applicant's arguments center around the examiner's reference to the evaluation-and-control-unit's "automatic function". In this case applicants have completely misrepresented the examiner's rejection. The examiner's rejection of claims 1-12 is clearly drawn to the non-enablement of the evaluation-and-control-unit as recited below under 112(1) rejections and in the previous office actions. Specifically, applicant's specification discloses that the evaluation-and-control-unit uses an "automatic function" (specification: page 5, line 13) in selecting and identifying components. Hence, in looking to the specification for enablement for the claimed limitations relating to the evaluation-and-control-unit, it would appear that the "automatic function" is an integral and critical part in the operation of the evaluation-and-control-unit. The examiner has therefor asserted that the specification's description of the "automatic function" is not sufficient to provide the necessary enablement for the claimed evaluation-and-control-unit. (see: 112(1) rejection below) Not that the "automatic function" has been rejected*

*as a claimed limitation under 112(1) as alleged by applicants. Merely stating that the "automatic function would easily be handled by a microprocessor running appropriate software", as alleged by applicants, does not address the enablement issue. The examiner therefor maintains that the specification does not provide a clear and concise description of the evaluation-and-control-unit.*

*Applicants further argue that a skilled artisan would know how to implement the claimed features relating to "comparing information of installation components of a component library with the picture data of the real installation to identify at least one of the installation components in the picture data as an identified installation component" by reading paragraphs [0009 - 0039] of application 2001/0025229. Specifically, that geometric attributes, e.g. size, shape, etc. with respect to components in the library and the stored picture data are compared in order to identify a matching installation component. The examiner has again reviewed these passages and respectfully disagrees. Applicants are claiming the ability "to identify at least one of the installation components in the picture data as an identified installation component" in claim 13. While, the recited passages make numerous vague references to using geometric properties in performing image analysis, none provide a clear and concise description the actual image analysis process. For example, paragraph [0036] recites, "the image analysis of the evaluation-and-control-unit attempts to match the geometric properties of the installation component with the geometric properties of the screen", however, it is inconceivable that a skilled artisan would be able to make and use the evaluation-and-control-unit from this description. There is no sufficient description of what the*

*geometric properties are, how they are matched, or how the image analysis actually "identifies" a component. The examiner therefor maintains that the specification does not provide a clear and concise description of the subject matter claimed.*

*In a nutshell, the specification does not disclose, and applicant's response has not specifically indicated, specifically how the claimed limitations relating to* ***deriving a hypotheses*** *for* ***identified components*** *in* ***picture data*** *are realized, or how the* ***evaluation-and-control-unit*** *for comparing the component information data with picture data actually operates to "identify" the "installation component" sufficient to allow one skilled in the art to make and/or use the claimed invention without undue experimentation. Accordingly, the examiner maintains the 112(1) rejection.*

*Regarding applicant's response to 103(a) rejections: Applicants first argue that the prior art (Hsu) does not teach the geometric method of image analysis disclosed by the present invention in paragraph [0030] and figure 1 of the specification. The examiner notes that, while the specific geometric image analysis process of the present invention has not been disclosed as noted above and below under 112(1) rejections, applicant's arguments now rely on features which have not been specifically claimed. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., geometric information contained in picture data and component information) are not recited in the rejected claim(s). Although the claims are interpreted in light of the*

*specification, limitations from the specification are not read into the claims. See In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).*

*Applicants also appear to be engaging in piecemeal analysis by arguing, for example, that Hsu does not compare picture data to the actual installation, and that Crandall does not teach an evaluation-and-control-unit for comparing the component information data with picture data as specifically recited in the language of the claim. Hu teaches identifying components by comparing component information data (from a knowledge base) with real picture data, while Crandall teaches generating a virtual model of a real system using virtual components (installation components) as cited below under 103(a) rejections. Hence, claimed limitations are rendered obvious in view of the combination of Mark, Hu, and Crandall. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).*

*The examiner therefore maintains the 103(a) rejection of claims 1-26 as cited below.*

*Regarding applicant's comments on objection the specification on PTO-326: Applicants are correct in assuming that the examiner has not objected to the specification.*

*Regarding applicant's comments on PTO-1449 references: Applicants are correct in assuming that the examiner has not considered the non-translated Japanese*

*language references crossed out on the PTO-1449. The examiner has however considered the corresponding US Patents as noted by applicants.*

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

***3. Claims 1-12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.***

*Specifically, in independent claim 1 applicant's are claiming an* ***evaluation and control unit*** *for comparing component information data with real picture data but the specification does not disclose an algorithm or technique for comparing component information data with real picture data. Neither the operation of the* ***evaluation and control*** *unit, nor the process of* ***identifying components in picture data****, nor the claimed* ***deriving hypotheses****, is sufficiently described in the specification to allow one skilled in the art to make and/or use the invention.*

*While page 4, line 5 of the specification states that the evaluation and control unit controls the process of generating the virtual installation model and controls an "automatic function" (page 5, line 13), it does not sufficiently describe functional operation either the process or the "automatic function". Obviously, one skilled in the art*

*would not be able to create an "automatic function" without specific details on how the automatic function operates. Merely stating that the evaluation and control unit "processes component data" (page 8, line 8) and "performs image analysis" (page 8, line 20) does not provide a sufficient description to allow one skilled in the art to make and/or use the invention. Dependent claims inherit these defects.*

***Claims 13-26 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for "generating picture data" and "storage to store", does not reasonably provide enablement for "comparing picture data** to **identify installation components" (claim 13) or "a processing unit to compare components". The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.***

*Specifically, independent claim 13 claims **comparing picture data** to **identify installation components** within the picture data but again the specification does not disclose an algorithm or technique for performing the comparison or identifying the components.*

*Independent claim 25 claims a **processing unit to compare components** but does not disclose the process for comparing components sufficient to allow one skilled in the art to make and/or use the invention.*

*Dependent claims inherit these defects.*

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

*4.* ***Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,025,847 issued to Marks in view of U.S. Patent 5,640,468 issued to Hsu in further view of U.S. Patent 5,552,984 issued to Crandall et al.***

*While the specification for the claimed invention is delinquent in the areas cited above (see 112(1) rejections), the examiner has made prior art rejections based on the limited scope of the information contained in the specification.*

*Independent claim 1 is drawn to:*

Generating an **image of installation model** by:
Memory (1st) for storing **picture data**
Memory (2nd) for storing **component information**
Memory (3rd) for storing **virtual installation model**
**Evaluation and control unit** for comparing component information data with real picture data
Identifying components in **picture data** as **installation components**
**Deriving a hypotheses** for **identified components** in **picture data**
Generating respective **installation components** in **virtual installation model**

*Regarding independent claim 1: Marks teaches a system and method of generating a 3D **(virtual) model** from an **image (picture)** using a computer system. The image is of an arrangement of physical objects (components) where primitives (geometric) representing a portion of a physical object (a component) in the image are specified as a set of parameters that correspond locations in the **image model**. Marks further discloses incorporating a **memory space** for storing picture data, component (object) information. (Abstract, Summary of Invention, Figs. 1-7, CL3-L2-10, CL4-L45, CL7-L35-67, CL7-L5-50)*

*Marks does not explicitly teach comparing component information data with real picture data.*

*Hu teaches a system and method for identifying components by **comparing component information data** (from a knowledge base) with **real picture data** and incorporating multiple memories for storing picture data and component information. Hu further discloses evaluating (deriving a hypotheses via the image system) identified components (objects) in the picture data. (Abstract, Summary of Invention, Figs. 1-4, 6, 8a-10b, CL13-L15-CL14-55)*

*Hu mentions, but further does not explicitly teach virtual components (installation).*

*Crandall teaches generating a **virtual model** of a **real system** using **virtual components** (installation components) from a library of components representing the total **virtual system** (installation). (Abstract, Summary of Invention, Figs. 1a&b, 9, CL2-L5-11, CL4-L1-29)*

*It would have obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Marks relating to a system and method for generating a 3D* ***(virtual) model*** *from an* ***image (picture)****, with the teachings of Hu relating to identifying components by* ***comparing component information data*** *with* ***real picture data*** *from a knowledge base, and to further modify the teachings of Marks with the teachings of Crandall relating to generating a* ***virtual model*** *of a* ***real system*** *using* ***virtual components*** *(installation components) from a library of components representing the total* ***virtual system*** *(installation), to realize a device and method for generating a virtual model of an installation. An obvious motivation exists since, as referenced by prior art, creating a 3D (virtual) model of physical objects provides more efficient detection of discrepancies between the model and the actual image. (See Marks Background)*

*Regarding dependent claims 2-4: Hu performs image analysis on picture data as previously cited above. Crandall teaches using* ***virtual components*** *(installation components) from a library of components representing the total* ***virtual system*** *(installation) (CL2-L5-11). Marks teaches objects being located by geometric information and multiple window views of picture data and 3D (virtual) model views. (CL4-L10-25, Figs. 2-7)*

*Regarding dependent claims 5-9: Marks discloses building a 3D (virtual) model using the well-known techniques of "dropping", "clicking and dragging", and "rubber banding" in the manipulation of primitives based on geometric information (CL4-L42). Marks also teaches the evaluation of structural components (by function) to assign*

*primitives (add components) in a 3d (virtual) installation model. (Figs. 9-25, CL3-L29-43, CL5-L12-25, CL6-L10-35)*

*Regarding dependent claims 10-12: Marks teaches the "automatic" component location (CL7-42) and a system incorporating a digital camera, digitized photographs (picture data), and a CAD system with memory and a multiple perspective view display. (Abstract, Summary of Invention, Figs. 1-7, CL3-L2-10, CL4-L45, CL7-L35-67, CL7-L5-50)*

*Independent claim 13 is drawn to:*

Generating an **image of real installation model** by:
Generating **picture data**
**comparing component information** data with picture data
Identifying components in **picture data** as **installation components**

*Regarding independent claim 13: As previously cited, Marks teaches a system and method of generating a 3D **(virtual) model** from an **image (picture)** using a computer system. The image is of an arrangement of physical objects (components) where primitives (geometric) representing a portion of a physical object (a component) in the image are specified as a set of parameters that correspond locations in the **image model**. (Abstract, Summary of Invention, Figs. 1-7, CL3-L2-10, CL4-L45, CL7-L35-67, CL7-L5-50)*

*Marks does not explicitly teach comparing component information data with real picture data.*

*Hu teaches a system and method for identifying components by* ***comparing component information data*** *(from a knowledge base) with* ***real picture data*** *and incorporating multiple memories for storing picture data and component information. Hu further discloses evaluating (deriving a hypotheses via the image system) identified components (objects) in the picture data. (Abstract, Summary of Invention, Figs. 1-4, 6, 8a-10b, CL13-L15-CL14-55)*

*Marks mentions, but further does not explicitly teach virtual components (installation).*

*Crandall teaches generating a* ***virtual model*** *of a* ***real system*** *using* ***virtual components*** *(installation components) from a* ***library of components*** *representing the total* ***virtual system*** *(installation). (Abstract, Summary of Invention, Figs. 1a&b, 9, CL2-L5-11, CL4-L1-29)*

*It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Marks relating to a system and method for generating a 3D* ***(virtual) model*** *from an* ***image (picture)****, with the teachings of Hu relating to identifying components by* ***comparing component information data*** *(from a knowledge base) with* ***real picture data****, and to further modify the teachings of Marks with the teachings of Crandall relating to generating a* ***virtual model*** *of a* ***real system*** *using* ***virtual components*** *(installation components) from a library of components representing the total* ***virtual system*** *(installation), to realize a device and method for generating a virtual model of an installation. An obvious motivation exists since, as referenced by prior art, creating a 3D (virtual) model of*

*physical objects provides more efficient detection of discrepancies between the model and the actual image. (See Marks Background)*

*Regarding dependent claims 14-16: As also previously cited, Hu teaches image analysis on picture data as previously cited above. Crandall teaches using* ***virtual components*** *(installation components) from a* ***library of components*** *representing the total* ***virtual system*** *(installation) (CL2-L5-11) Marks teaches the manipulation of primitives based on geometric information (CL4-L42) and multiple window views of picture data and 3D (virtual) model views. (CL4-L10-25, Figs. 2-7).*

*Regarding dependent claims 17-24: Marks discloses building a 3D (virtual) model using the well-known techniques of "dropping", "clicking and dragging", and "rubber banding" in the manipulation (matching) of primitives based on* ***geometric information*** *(CL4-L42). Marks also teaches the* ***evaluation*** *of structural components (by function) to assign primitives (add components) in a 3d (virtual) installation model. (Figs. 9-25, CL3-L29-43, CL5-L12-25, CL6-L10-35) It further would have been obvious, and necessary, to "select" and "drag" installation components since all modern GUI based CAD system operate in this manner. Marks further teaches "automatic" component location (CL7-42) and a system incorporating a digital camera, digitized photographs (picture data), and a CAD system with memory and a multiple perspective view display. (Abstract, Summary of Invention, Figs. 1-7, CL3-L2-10, CL4-L45, CL7-L35-67, CL7-L5-50)*

*Regarding claims 25 and 26: Claims 25 and 26 merely claim the virtual model of a facility that includes the same limitations as disclosed in claims 1-24. Claims 25 and 26 are therefore rejected using the same reasoning as previously cited above.*

## ***Conclusion***

*5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly,* ***THIS ACTION IS MADE FINAL****. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).*

*A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.*

*The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, careful consideration should be given prior to applicant's response to this Office Action.*

*U.S. Patent 5,988,862 issued Kacyra et al teaches component modeling from picture data.*

*U.S. Patent 5,894,310 issued to Arsenault et al teaches virtual modeling of systems.*

*U.S. Patent 5,812,394 issued to Lewis et al teaches virtual components and installation.*

*U.S. Patent 4,937,768 issued to Carver et al teaches virtual system modeling.*

*Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 571-272-3778 and whose normal working hours are 8:30am to 5:00pm Monday to Friday. Any inquiry of a general nature relating to the status of this application should be directed to the group receptionist whose telephone number is 571-272-3700. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jean Homere can be reached at 571-272-3780. The Official Fax Number is:* (703) 872-9306

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January 10, 2005

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